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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,709	12/30/2003	Khosro Shamsaifar	WJT08-0057	2108

7590 11/16/2006  
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EXAMINER

PAN, YUWEN

ART UNIT PAPER NUMBER

2618

DATE MAILED: 11/16/2006

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**MAILED**  
**NOV 16 2006**  
**Technology Center 2600**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/748,709  
Filing Date: December 30, 2003  
Appellant(s): SHAMSAIFAR ET AL.

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James S. Finn  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed on 9/21/2006 appealing from the Office action mailed 06/06/2006.

Art Unit: 2618

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,535,076	Partridge et al.	3-2003
2002/0090974 A1	Hagn	7-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 11, 15-19, 25, 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagn (US 20020090974A1) in view of Partridge et al (US006535076B2).

Per claims 1, 15, and 31, Hagn discloses an electronically tunable RF Front End Module (see figure 1, 12 and 13), comprising: an antenna for transmitting and receiving a plurality of RF signals (see figure 1 item A); a Diplexer High and low pass filter in communication with said antenna for distinguishing a plurality of groups of RF signals (see figure 1 items HDI1 and LDI1); a second RF switch in communication with said first RF switch for switching between transmit and receive signals (see figure 1 item MS1); a low pass filter associated with said second RF switch for transmitting selected RF signals from said plurality of RF signals (see figure 1 and item SF1,2); a third RF switch in communication with said first RF switch for switching between transmit and receive signals (see figure 1 and item US1); and a low pass filter associated with said third RF switch for transmitting selected RF signals from said plurality of RF signals (see figure 1 and item SF3). Hagn's admitted prior art doesn't teach that a tunable band pass filter associated with said second RF switch for distinguishing received selected RF signals from said plurality of received RF signals and a tunable band pass filter associated with said third RF switch for distinguishing received selected RF signals from said plurality of received RF signals. Hagn's invention teaches that that a tunable band pass filter associated with

Art Unit: 2618

said second RF switch for distinguishing received selected RF signals from said plurality of received RF signals (see figure 11 and item DUIO) and a tunable band pass filter associated with said third RF switch for distinguishing received selected RF signals from said plurality of received RF signals (see figure 12 and item SF3,4, column 5 and paragraph 50). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine teaching of Hagn and Hagn's admitted prior art such that highly integrated filters and switch would be able to reduce the size of a 3G phone.

Furthermore, Hagon doesn't teach that said tunable band pass filter associated with said second RF switch utilizes voltage tunable dielectric capacitors to enable tuning. Partridge teaches that said tunable band pass filter associated with said second RF switch utilizes voltage tunable dielectric capacitors to enable tuning (see column 1 and line 55-column 2 and line 32). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Partridge with Hagon such that the voltage tunable dielectric materials have several inherent advantages including sub-nanosecond response times and very low current under switching conditions (see column 1 and lines 29-45).

Per claims 2, 16, 32, Hagn further teaches that said unable band pass filter associated with said second RF switch for distinguishing received selected RF signals from said plurality of received RF signals, distinguishes between frequencies in the DCS and PCS bands (see paragraph 6).

Per claims 3, 17, and 33, Hagn further teaches that low pass filter associated with said second RF switch for transmitting selected RF signals from said plurality of RF signals, selectively transmits signals in the DCS and PCS frequency bands (see paragraph 6).

Per claims 4, 18, and 34, Hagan further teaches said tunable band pass filter associated with said third RF switch for distinguishing received selected RF signals from said plurality of received RF signals distinguishes between frequencies in the GSM 800 and GSM 900 bands (see paragraph 5).

Per claims 5, 19, and 35, Hagan further teaches that said low pass filter associated with said transmitting selected RF signals from selectively transmits signals in the GSM 800 and GSM 900 frequency bands (see paragraph 5).

Per claims 11, 25, Hagan further teaches that said tunable band pass filter associated with said third RF switch utilizes semiconductor tunable varactors to enable tuning (see paragraph 153).

3. Claims 14, 28-30, 44, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagn (US 20020090974A1) in view of Yamakawa et al (US 20030068998A1).

Per claims 14, 28, and 44, Hagn doesn't teach that a duplexer associated with said second RF switch, said duplexer outputting an RF signal to a bandpass filter for transmitting a selected RF signal and receiving a selected RF signal from said bandpass filter. Yamakawa teaches that a duplexer associated with said second RF switch, said duplexer outputting an RF signal to a

Art Unit: 2618

bandpass filter for transmitting a selected RF signal and receiving a selected RF signal from said bandpass filter (see figure 6, item 308). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Yamakawa with Hagn's invention such that a cellular phone would be able to operate more than two different wireless communication systems.

Per claims 29, 30 and 45, Yamakawa further teaches that said selected transmitted RF signal and selected received RF signal is a signal in the UMTS frequency band (see paragraph 6).

**(10) Response to Argument**

Prior to the detail argument regarding to the appellant's remark, the examiner would like to have a little flash back about the prosecution of the appellant's patent application. The case was examined in June 2005 and a first office action was issued during that month. The first office action indicated that appellant's invention was rejected by prior art of record, Hagn reference under 35 U.S.C 103, as Hagn's admitted prior art in view of Hagn's invention. The appellant came back with an amendment including a newly added limitation, "wherein said tunable band pass filter associated with said second RF switch utilized voltage tunable dielectric capacitors to enable tuning", to overcomes previous rejection by Hagn. According to the appellant's remarks during the amendment, the appellant kept emphasizing that Hagn doesn't teach the newly added limitation that the tunable band pass filter utilizes voltage tunable dielectric capacitors. After the examiner reviewed the amended claims, the examiner updated search and find Partridge reference and further combining Partridge with Hagn's reference.

Art Unit: 2618

Obviously, the appellant disagreed and made arguments that it is not obvious and no motivation to combine Partridge with Hugn's reference.

Clearly, there should not be issues on whether the prior art of record's teaching has met the appellant's claim limitation and whether it is obvious or not to combine the Hugn's admitted prior art with Hugn's invention since throughout the prosecution, the appellant never content anything regarding missing claim limitation and Hugn's invention is obviously an improvement from Hugn's admitted prior art as disclosed in Hugn's background of the invention to introduce a front-end circuit for better handling multi-mode 3G wireless system. Thus, this background discussion of Hugn clearly gives Hugn's motivation to improve upon his admitted prior art when making his invention.

So the only issue here will be whether appellant claimed invention is unpatentable over Hugn and in view of Partridge reference. The answer from the examiner is still "Yes". The teaching from Hugn has depicted a broad or big picture of RF front-end circuit for 3G wireless system especially where two different modes are co-existing and sharing one antenna for transmitting and receiving (see paragraph 50). Based on the teaching of paragraph 50, one of ordinary skill in the art would know that at least two filters are required for handling both modes during either up-converting or down-converting of high frequency around 2 GHz. However the teaching further suggests, "[a] suitable filter technology may be utilized for each of the two alternatives or, respectively, the two filters can be realized in a suitable filter technology". Based on this teaching, one of ordinary skill in the art would wonder what kind of suitable filter that is able to accommodate at least two frequency band modes system. Clearly, Hugn doesn't mention or suggest what kind of suitable filter (tunable filter) is able to do the job according to the filter



Art Unit: 2618

technology. Partridge teaches an electrical tunable device, especially tunable materials for application in wireless communication system including scanning antennas for both point-to-multi-point and point-to-point application (see column 1 and lines 28-35) and how the material is utilized in combination with capacitor (see column 1 and lines 55-65). Partridge further emphasized the natural advantages and characteristic of the tunable dielectric materials such as quick time response (less delay) and draw less power during switching (see column 1 and lines 46-52). Therefore one ordinary skill in the art would implement a tunable filter according to Partridge's teaching and inserts/replaces it into the position of Hagn where a suitable filter for handling multi-modes frequencies would be placed according to Hagn because of the natural of such tunable dielectric material.

In addition, the appellant's background invention also admits the wide usage of voltage-controlled tunable dielectric capacitor based tunable filter and the natural of it because such filter has better performance than other tunable filter with different material such as mechanically and magnetically tunable filters or semiconductor varactor based filter (see appellant background of the invention, paragraph 1 and 2), such as lower loss, higher power handling and higher IP3.

#### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Art Unit: 2618


For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

November 6, 2006


Conferees:

Matthew Anderson  
SPE of 2618

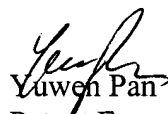


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